



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/788,848	02/27/2004	George Qiyi Zhang	E20020450	6861

7590 11/16/2005

Michael M. Rickin, Esq.  
ABB Inc.  
Legal Department - 4U6  
29801 Euclid Avenue  
Wickliffe, OH 44092-1898

EXAMINER

PAHNG, JASON Y

ART UNIT	PAPER NUMBER
----------	--------------

3725

DATE MAILED: 11/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/788,848	Applicant(s) ZHANG ET AL.	
	Examiner Jason Y. Pahng	Art Unit 3725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 October 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 15-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 15-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election without traverse of Group IA, claims 1-8, in the reply filed on September 27, 2005 is acknowledged.

It is noted that claims 9-14 are cancelled by Applicant.

### ***Drawings***

New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because:

1. letters are not legible (Figures 1, 4, 5b, and 7);
2. drawings contain shading which is improper (Figures 1, 2, 3a, 3b, 3c, 4, and 5b);
3. the reference number "44" in Figure 1 does not appear to be referring to the trunion shaft; and
4. the trunion shaft referenced by "54" in Figure 5b is inconsistent with "44" in Figure 3b.

Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

### ***Specification***

The disclosure is objected to because of the following informalities:

The trunion shaft in page 16 referenced by "54" is inconsistent with "44" in page 14.

Appropriate correction is required.

### ***Claim Objections***

Claim 3 is objected to because of the following informalities: It appears that the phrase "thickness if said solid fuel" should be "thickness of said solid fuel." Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-8 and 15-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With regard to claim 1, there is no antecedent basis for "the displacement" (line 10), "the movement" (line 10), "said assembly shaft displacement" (line 15), "there is no antecedent basis for "the formula" (line 16), "the bowl frequency" (line 18), and "the

roller frequency" (line 18). The scope of the claim limitation is totally incomprehensible because of the numerous antecedent basis issues.

With regard to claim 2, there is no antecedent basis for "the reduction" (line 2), "the formula" (line 3), "the dominant roller frequency peak" (line 7), and "the secondary roller frequency peak" (line 8). The scope of the claim limitation is totally incomprehensible because of the numerous antecedent basis issues.

With regard to claim 3, there is no antecedent basis for "the relative thickness" (line 2), "the formula" (line 2), "the displacement" (line 4), "said journal spring shaft" (line 4), and "the calibrated value" (line 5). The scope of the claim limitation is totally incomprehensible because of the numerous antecedent basis issues.

With regard to claim 7, there is no antecedent basis for "the displacement" (line 10), "the movement" (line 10), "said assembly shaft displacement" (line 15), "the reduction" (lines 15-16), "the formula" (lines 16-17), "the dominant roller frequency peak" (line 20), and "the secondary roller frequency peak" (line 20). The scope of the claim limitation is totally incomprehensible because of the numerous antecedent basis issues.

With regard to claim 8, there is no antecedent basis for "the displacement" (line 10), "the movement" (line 10), "said assembly shaft displacement" (line 15), "the relative thickness" (lines 15-16), "the formula" (line 16), "the displacement" (line 18), "said journal spring shaft" (line 18), and "the calibrated value" (line 19). The scope of the claim limitation is totally incomprehensible because of the numerous antecedent basis issues.

With regard to claim 15, there is no antecedent basis for "the availability" (line 3), "the formula" (line 4), "the weight factor" (line 6), and "the availability" (line 6). The scope of the claim limitation is totally incomprehensible because of the numerous antecedent basis issues.

With regard to claim 17, there is no antecedent basis for "the formula" (line 4), "the weight factor" (line 6), and "the availability" (line 6). The scope of the claim limitation is totally incomprehensible because of the numerous antecedent basis issues.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 5-8, and 15-17, as well as can be understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Brundiek (US 5,244,157) in view of Vendelin et al. (US 4,717,084), Williams (US 4,798,342), and Nakano et al. (US 2004/0148078).

With regard to claims 1, 2, and 7, Brundiek discloses substantially all of the claimed structure including:

1. a roll-bowl type mill for pulverizing solid fuels for use in firing a steam generator  
(column 1, lines 7-11; column 2, lines -13);
2. a bowl (3) having a predetermined diameter (Figure 9);
3. a roller (1a) assembly (1a, 44, 45) associated with roller bearing;

4. the assembly for holding each of the rollers (1a) and for applying a preload on each of the rollers (1a); and
5. the rollers (1a) located a predetermined distance above the bowl (3) in Figure 9.

Brundiek also discloses data acquisition system including a sensor (67) for measuring vibration of the roller, but does not recite a sensor for measuring displacement of the roller for the grinding gap. In a closely related art pertinent to the problem, Vendelin discloses a cone crusher with a sensor (25) for measuring displacement of the grinding gap in order to control the grinding gap (column 3, lines 10-12) and determine wear (column 6, lines 43-47). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify Brundiek with a sensor for measuring displacement of the grinding gap in order to control the grinding gap and determine wear, as taught by Vendelin.

With regard to the data acquisition system comprising a computer operable to perform data collection and analysis for a roller mill, it is well known in the art to use a computer with a roller mill. For an example, in a closely related art, Williams discloses a roller mill assembly including data acquisition system specifically comprising a computer (column 4, lines 17-30) in order to perform data collection and analyze the data of a roller mill. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to provide Brundiek with a computer operable to perform data collection and analysis in order to perform data collection and analyze the data of a roller mill, as taught by Williams.

With regard to the analysis including a frequency power spectrum analysis, it is well known in the art to use a frequency power spectrum analysis in order to analyze data from a displacement sensor. As an example, in a closely related art pertinent to the problem, Nakano et al. discloses using a frequency power spectrum analysis in order to analyze data from a displacement sensor [0151]. Therefore, it would it would have been obvious to one skilled in the art at the time the invention was made to provide Brundiek (as modified) with using a frequency power spectrum analysis in order to analyze data from a displacement sensor, as taught by Nakano.

With regard to the specific formula recited for the analysis, it would have been obvious that various calculating algorithms can be used in determining the wear. Furthermore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to formulate a wear calculating algorithm with different variables and constants, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA1980).

Claims 3 and 8 call for the computer to determine thickness of the solid fuel in the mill. In a closely related art, Williams discloses a roller mill assembly with a computer system in order to determine the particle size (column 4, lines 53-55). Therefore, it would it would have been obvious to one skilled in the art at the time the invention was made to provide Brundiek (as modified) computer system in order to determine the particle size, as taught by Williams. With regard to the specific formula recited for the determination of particle size, it would have been obvious that various



calculating algorithms can be used in determining the particle size. Furthermore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to formulate a particle size calculating algorithm with different variables and constants, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA1980).

With regard to claim 5, Brundiek discloses a trunion or T shaft in Figure 9.

With regard to claim 6, Brundiek discloses a connecting means comprising the assembly (Figure 9).

With regard to claims 15-17, Brundiek (as modified) discloses a computer operable to determine an indicator. With regard to the specific formula recited for the analysis, it would have been obvious that various calculating algorithms can be used in determining the indicator. Furthermore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to formulate the indicator calculating algorithm with different variables and constants, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA1980).

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brundiek (US 5,244,157) in view of Vendelin et al. (US 4,717,084), Williams (US 4,798,342), and Nakano et al. (US 2004/0148078) as applied above, further in view of Sjostrom (US 6,295,851). Brundiek discloses a vibration sensor mounted on a wall (Figure 9). With regard to the wear of roller bearings, in a closely related art pertinent to the issue,

Sjostrom teaches using a vibration sensor with a computer with analysis software (column 2, lines 25-30) in order to determine bearing wear (column 3, lines 54-57). Therefore, it would it would have been obvious to one skilled in the art at the time the invention was made to teach Brundiek (as modified) with the use of a vibration sensor with a computer with analysis software in order to determine bearing wear, as taught by Sjostrom.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Y. Pahng whose telephone number is 571 272 4522. The examiner can normally be reached on 9:00 AM - 7:00 PM, Monday-Thursday.

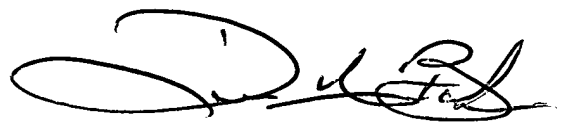
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Derris Banks can be reached on 571 272 4419. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/788,848  
Art Unit: 3725

Page 10

JYP

A handwritten signature in black ink, appearing to read "D. H. Banks", with a large, stylized initial "D" and a flourish at the end.

**DERRIS H. BANKS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3700**